Health Alert:

UPDATED Missouri COVID-19 PUI Definition and Testing Algorithm

March 12, 2020

This document will be updated as new information becomes available. The current version can always be viewed at http://www.health.mo.gov.

The Missouri Department of Health & Senior Services (DHSS) is now using four types of documents to provide important information to medical and public health professionals, and to other interested persons:

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

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Health Alert
March 12, 2020

FROM: **RANDALL W. WILLIAMS, MD, FACOG**
DIRECTOR

SUBJECT: **UPDATED Missouri COVID-19 PUI Definition and Testing Algorithm**

Recognizing persons who are at risk for COVID-19 is a critical component of identifying cases and preventing further transmission. With expanding spread of COVID-19, additional areas of geographic risk are being identified and the criteria for considering testing are being updated to reflect this spread. In addition, with increasing access to testing, the criteria for testing for COVID-19 have been expanded to include more symptomatic persons, even in the absence of travel history to affected areas or known exposure to another case, to quickly detect and respond to community spread of the virus in the United States

Criteria to Guide Evaluation and Laboratory Testing for COVID-19 at the Missouri State Public Health Laboratory

COVID-19 diagnostic testing is available through the Missouri State Public Health Laboratory for individuals meeting the criteria listed below. The areas with sustained transmission have been updated since the March 9, 2020 Health Update. Clinicians should note that the geographic locations listed are likely to continue to change with the epidemiologic picture of the outbreak.

In addition, the algorithm below is being used by our call center to determine if testing for COVID-19 by the State Public Health Laboratory will be approved.

Please note that some of the initial decision points require that the patient be evaluated by a healthcare provider. In addition, requests for testing approval must come from a healthcare provider, not the patient or patient's family member. To request testing for patients that meet one of these criteria, please contact your local public health agency, or the Missouri Department of Health and Senior Services (DHSS) at 800-392-0272 (24/7).

For individuals not meeting these DHSS criteria, providers may wish to pursue private laboratory testing. Testing through private laboratories does not require DHSS approval.

Interim Missouri COVID-19 Person Under Investigation (PUI) Definition

Interim Missouri COVID-19 Person Under Investigation (PUI) Definition
Updated March 11, 2020

Clinical Features		Epidemiologic Risk
Fever[1] **or** signs/symptoms of lower respiratory illness (e.g. cough or shortness of breath)	AND	Any person, including healthcare workers[2], who has had close contact[3] with a laboratory-confirmed[4] COVID-19 patient within 14 days of symptom onset
Fever[1] **and** signs/symptoms of a lower respiratory illness (e.g., cough or shortness of breath) requiring hospitalization	AND	A history of travel from affected geographic areas[5] (see below) within 14 days of symptom onset
Fever[1] with severe acute lower respiratory illness (e.g., pneumonia, ARDS) requiring hospitalization and without alternative explanatory diagnosis (e.g., influenza)[6]	AND	No source of exposure has been identified
Fever[1] **and** signs/symptoms of a lower respiratory illness (e.g., cough or shortness of breath) without alternative explanatory diagnosis (e.g., influenza), not hospitalized or considered severe	AND	A history of travel from affected geographic areas[5] (see below) within 14 days of symptom onset

Areas with Sustained (Ongoing) Transmission			
International (By WHO Region)			US
European Italy Spain Germany France	Western Pacific Japan South Korea China	Eastern Mediterranean Iran	King County/Seattle, Washington, USA Westchester County, New York, USA Santa Clara County, California, USA

Footnotes

[1]Fever may be subjective or confirmed

[2]For healthcare personnel, testing may be considered if there has been exposure to a person with suspected COVID-19 without laboratory confirmation. Because of their often extensive and close contact with vulnerable patients in healthcare settings, even mild signs and symptoms (e.g., sore throat) of COVID-19 should be evaluated among potentially exposed healthcare personnel. Additional information is available in CDC's Interim U.S. Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with Coronavirus Disease 2019 (COVID-19).

[3]Close contact is defined as—

a) being within approximately 6 feet (2 meters) of a COVID-19 case for a prolonged period of time; close contact can occur while caring for, living with, visiting, or sharing a healthcare waiting area or room with a COVID-19 case

– or –

b) having direct contact with infectious secretions of a COVID-19 case (e.g., being coughed on)

If such contact occurs while not wearing recommended personal protective equipment or PPE (e.g., gowns, gloves, NIOSH-certified disposable N95 respirator, eye protection), criteria for PUI consideration are met.

Additional information is available in CDC's updated Interim Infection Prevention and Control Recommendations for Patients with Confirmed COVID-19 or Persons Under Investigation for COVID-19 in Healthcare Settings.

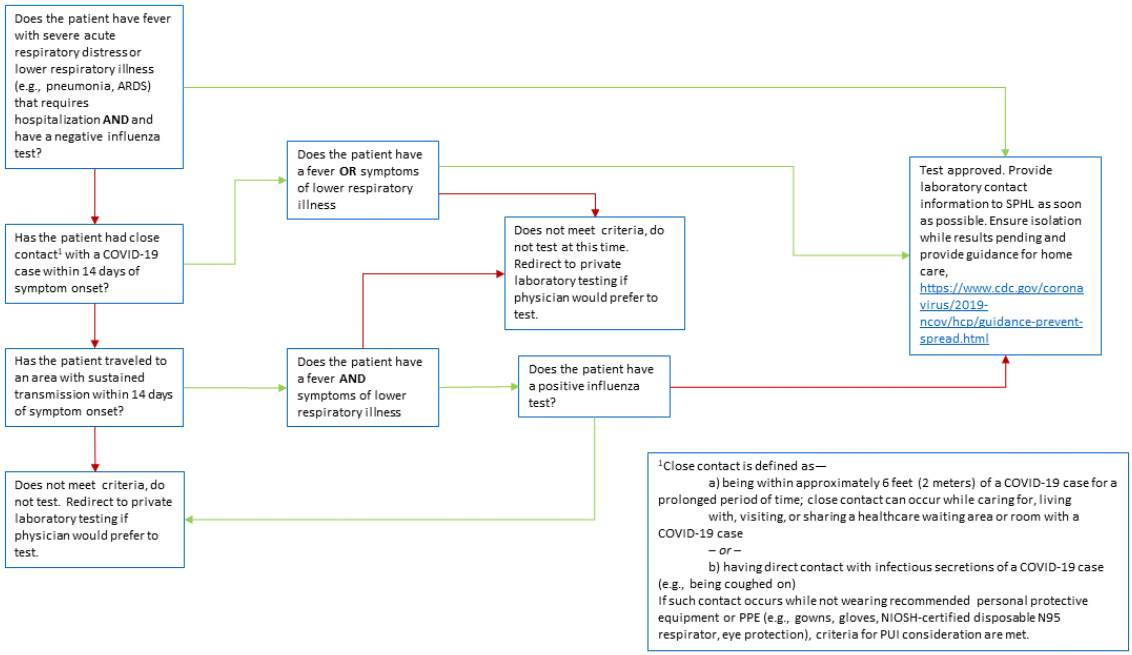
Data to inform the definition of close contact are limited. Considerations when assessing close contact include the duration of exposure (e.g., longer exposure time likely increases exposure risk) and the clinical symptoms of the person with COVID-19 (e.g., coughing likely increases exposure risk as does exposure to a severely ill patient). Special consideration should be given to healthcare personnel exposed in healthcare settings as described in CDC's Interim U.S. Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with COVID-19.

[4]Documentation of laboratory-confirmation of COVID-19 may not be possible for travelers or persons caring for COVID-19 patients in other countries.

[5]Affected areas are defined as geographic regions where sustained community transmission has been identified. Relevant affected areas will be defined as a country with at least a CDC Level 2 Travel Health Notice. See all COVID-19 Travel Health Notices.

[6]Category includes single or clusters of patients with severe acute lower respiratory illness (e.g., pneumonia, ARDS) of unknown etiology in which COVID-19 is being considered.

Interim Missouri COVID-19 Testing Algorithm



Health Alert:

Multisystem Inflammatory Syndrome in Children (MIS-C) Case Report Forms

May 24, 2020

This document will be updated as new information becomes available. The current version can always be viewed at http://www.health.mo.gov.

The Missouri Department of Health & Senior Services (DHSS) is now using four types of documents to provide important information to medical and public health professionals, and to other interested persons:

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Health Alert
May 24, 2020

FROM: **RANDALL W. WILLIAMS, MD, FACOG**
DIRECTOR

SUBJECT: **Multisystem Inflammatory Syndrome in Children (MIS-C) Case Report Forms**

On May 14, 2020 DHSS distributed a CDC-issued Health Advisory which detailed Multisystem Inflammatory Syndrome in Children (MIS-C) Associated with Coronavirus Disease 2019 (COVID-19).

The advisory made reference to case report forms under development by CDC. Forms were released Thursday, May 21. They include:

- MIS-C CRF Instructions
- MIS-C CRF Fillable
  - This is a PDF with fillable fields
- MIS-C CRF Form
  - Non-fillable form

Each form listed above can be found at https://health.mo.gov/living/healthcondiseases/communicable/novel-coronavirus/professionals.php.

Completed case report forms should be provided via email to your regional DHSS epidemiologist or via fax to the Bureau of Communicable Disease Control and Prevention at 573-526-0235. MIS-C as a reportable condition will be added to 19 CSR 20-20.020 at a later date.

Missouri healthcare providers and public health practitioners: Please contact your local public health agency or the Missouri Department of Health and Senior Services' (DHSS') Bureau of Communicable Disease Control and Prevention at 573-751-6113 or 800-392-0272 (24/7) with questions regarding this Alert.

U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
AND PREVENTION
ATLANTA, GA 30329

Multisystem Inflammatory Syndrome Associated with COVID-19 Case Report Form

MIS ID *(REQUIRED)*:_____ **Health Department ID:**_____ **NCOV ID** *(if available)*:_____

NNDSS ID *(local_record_id/case id)*:_____ **Tools for CRF data submission to supplement NNDSS case notification/data:** ○ DCIPHER ○ RedCap

Abstractor name: _____ **Date of abstraction:** ____/____/_____

SECTION 1 – INCLUSION CRITERIA

1.1 ☐ Age <21, AND

1.2 ☐ Fever >38.0°C for ≥24 hours, or report of subjective fever lasting ≥24 hours, AND

1.3 ☐ Laboratory markers of inflammation (including, but not limited to one or more; an elevated C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), fibrinogen, procalcitonin, d-dimer, ferritin, lactic acid dehydrogenase (LDH), or interleukin 6 (IL-6), elevated neutrophils, reduced lymphocytes and low albumin, AND

1.4 ☐ Evidence of clinically severe illness requiring hospitalization, with multisystem (≥2) organ involvement *(check all applicable below)*: AND

- **1.4.1** ☐ Cardiac (e.g. shock, elevated troponin, BNP, abnormal echocardiogram, arrhythmia)
- **1.4.2** ☐ Renal (e.g. acute kidney injury or renal failure)
- **1.4.3** ☐ Respiratory (e.g. pneumonia, ARDS, pulmonary embolism)
- **1.4.4** ☐ Hematologic (e.g. elevated D-dimers, thrombophilia, or thrombocytopenia)
- **1.4.5** ☐ Gastrointestinal (e.g. elevated bilirubin, elevated liver enzymes, or diarrhea)
- **1.4.6** ☐ Dermatologic, (e.g. rash, mucocutaneous lesions)
- **1.4.7** ☐ Neurological, (e.g. CVA, aseptic meningitis, encephalopathy)

1.5 ☐ No alternative plausible diagnosis; AND

1.6 ☐ Positive for current or recent SARS-COV-2 infection by (check all applicable below): OR

- **1.6.1** ☐ RT-PCR
- **1.6.2** ☐ Serology
- **1.6.3** ☐ Antigen test

1.7 ☐ COVID-19 exposure within the 4 weeks prior to the onset of symptoms

- **1.7.1** If yes, date of first exposure within the 4 weeks prior : *(MM/DD/YYYY)*: ____/____/_____ ☐ Unknown

SECTION 2 – PATIENT DEMOGRAPHICS

2.1 **State of Residence:** _____

2.2 **Patient zip code**/postal code *(primary residence)*: _____

2.3 **Date of birth** *(MM/DD/YYYY)*: ____/____/_____

2.4 **Sex:** ○ Male ○ Female

2.5 **Ethnicity:** ○ Hispanic or Latino ○ Not Hispanic or Latino ○ Refused or Unknown

2.6 **Race** *(mark all that apply, selecting more than one option as necessary)*:

- **2.6.1** ☐ White
- **2.6.2** ☐ Black or African American
- **2.6.3** ☐ American Indian
- **2.6.4** ☐ Alaska Native or Aboriginal Canadian
- **2.6.5** ☐ Native Hawaiian
- **2.6.6** ☐ Other Pacific Islander
- **2.6.7** ☐ Asian
- **2.6.8** ☐ Other
- **2.6.9** ☐ Refused or Don't know

2.7 **Height:** _____ inches

2.8 **Weight:** _____ lbs

2.9 **BMI:** _____

Comorbidities:

2.10.1	Immunosuppressive disorder/malignancy	○ Yes	○ No
2.10.2	Obesity	○ Yes	○ No
2. 10.3	Type 1 diabetes	○ Yes	○ No
2. 10.4	Type 2 diabetes	○ Yes	○ No
2. 10.5	Seizures	○ Yes	○ No
2. 10.6	Congenital heart disease	○ Yes	○ No
2. 10.7	Sickle cell disease	○ Yes	○ No
2. 10.8	Chronic lung disease	○ Yes	○ No
2. 10.9	Other congenital malformations	○ Yes	○ No
2. 10.10	Other *(specify)*: _____		

2.11 Hospital admission date
(MM/DD/YYYY): ____/____/_____

- **2.11.1** Number of days in the hospital: _____

2.12 If admitted to the ICU, admission date
(MM/DD/YYYY): ____/____/_____

- **2.12.1** Number of days in the ICU: _____

2.13 **Patient outcome:** ○ Died ○ Discharged ○ Still admitted

- **2.13.2** Hospital discharge or death date
(MM/DD/YYYY): ____/____/_____

SECTION 3 – CLINICAL SIGNS AND SYMPTOMS

3.1 Did the patient have preceding COVID-like illness? ○ Yes ○ No

3.1.1 Date of symptom onset *(MM/DD/YYYY)*: ____/____/_____

3.2 Date of symptom onset of MIS *(MM/DD/YYYY)*: ____/____/_____

3.3. Fever ≥ 38.0°C: ○ Yes ○ No

3.3.1 Date of fever onset *(MM/DD/YYYY)*: ____/____/_____

3.3.2 Highest Temperature: _____ °C

3.3.3 Number of days febrile: _____

Signs and symptoms ***during present illness***

3.4.1	**Cardiac**			
	3.4.1.1	Shock	○ Yes	○ No
	3.4.1.2	Elevated troponin	○ Yes	○ No
	3.4.1.3	Elevated BNP or NT-proBNP	○ Yes	○ No
3.4.2	**Renal**			
	3.4.2.1	Acute kidney injury	○ Yes	○ No
	3.4.2.2	Renal failure	○ Yes	○ No
3.4.3	**Respiratory**			
	3.4.3.1	Cough	○ Yes	○ No
	3.4.3.2	Shortness of breath	○ Yes	○ No
	3.4.3.3	Chest pain/tightness	○ Yes	○ No
	3.4.3.4	Pneumonia	○ Yes	○ No
	3.4.3.5	ARDS	○ Yes	○ No
	3.4.3.6	Pulmonary embolism	○ Yes	○ No
3.4.4	**Hematologic**			
	3.4.4.1	Elevated D-dimers	○ Yes	○ No
	3.4.4.2	Thrombophilia	○ Yes	○ No
	3.4.4.3	Thrombocytopenia	○ Yes	○ No
3.4.5	**Gastrointestinal**			
	3.4.5.1	Abdominal pain	○ Yes	○ No
	3.4.5.2	Vomiting	○ Yes	○ No
	3.4.5.3	Diarrhea	○ Yes	○ No
	3.4.5.4	Elevated bilirubin	○ Yes	○ No
	3.4.5.5	Elevated liver enzymes	○ Yes	○ No
3.4.6	**Dermatologic**			
	3.4.6.1	Rash	○ Yes	○ No
	3.4.6.2	Mucocutaneous lesions	○ Yes	○ No
3.4.7	**Neurological**			
	3.4.7.1	Headache	○ Yes	○ No
	3.4.7.2	Altered mental state	○ Yes	○ No
	3.4.7.3	Syncope/near syncope	○ Yes	○ No
	3.4.7.5	Meningitis	○ Yes	○ No
	3.4.7.6	Encephalopathy	○ Yes	○ No
3.4.8	**Other**			
	3.4.8.1	Neck pain	○ Yes	○ No
	3.4.8.2	Myalgia	○ Yes	○ No
	3.4.8.3	Conjunctival injection	○ Yes	○ No
	3.4.8.4	Periorbital edema	○ Yes	○ No
	3.4.8.5	Cervical lymphadenopathy >1.5 cm diameter	○ Yes	○ No

SECTION 4 – COMPLICATIONS

4.1	**Arrhythmia**	○ Yes	○ No
	If yes:		
	4.1.1 Ventricular arrhythmia:	○ Yes	○ No
	4.1.2 Supraventricular arrhythmia:	○ Yes	○ No
	4.1.3 Other arrhythmia *(specify)*:	○ Yes	○ No
	_____		
4.2	Congestive heart failure	○ Yes	○ No
4.3	Myocarditis	○ Yes	○ No
4.4	Pericarditis	○ Yes	○ No
4.5	Liver failure	○ Yes	○ No
4.6	Deep vein thrombosis or PE	○ Yes	○ No
4.7	ARDS	○ Yes	○ No
4.8	Pneumonia	○ Yes	○ No
4.9	CVA or stroke	○ Yes	○ No
4.10	Encephalitis or aseptic meningitis	○ Yes	○ No
4.11	Shock	○ Yes	○ No
4.12	Hypotension	○ Yes	○ No

SECTION 5 – TREATMENTS

5.1	Low flow nasal cannula	○ Yes	○ No
5.2	High flow nasal cannula	○ Yes	○ No
5.3	Non-invasive ventilation	○ Yes	○ No
5.4	Intubation	○ Yes	○ No
5.5	Mechanical ventilation	○ Yes	○ No
5.6	ECMO	○ Yes	○ No
5.7	Vasoactive medications (e.g. epinephrine, milrinone, norepinephrine, or vasopressin) *(specify)*: _____	○ Yes	○ No
5.8	Steroids	○ Yes	○ No
5.9	Immune modulators (e.g. anakinra, tocilizumab) *(specify)*: _____	○ Yes	○ No
5.10	Antiplatelets (e.g. aspirin, clopidogrel) *(specify)*: _____	○ Yes	○ No
5.11	Anticoagulation (e.g. heparin, enoxaparin, warfarin) *(specify)*: _____	○ Yes	○ No
5.12	Dialysis	○ Yes	○ No
5.13	First IVIG	○ Yes	○ No
5.14	Second IVIG	○ Yes	○ No

SECTION 6 – STUDIES

6.1 Blood Test Results

6.1.1	Fibrinogen	Highest value: _____	units: _____	○ Low	○ Normal	○ High
6.1.2	CRP	Highest value: _____	units: _____	○ Low	○ Normal	○ High
6.1.3	Ferritin	Highest value: _____	units: _____	○ Low	○ Normal	○ High
6.1.4	Troponin	Highest value: _____	units: _____	○ Low	○ Normal	○ High
6.1.5	BNP	Highest value: _____	units: _____	○ Low	○ Normal	○ High
6.1.6	NT-proBNP	Highest value: _____	units: _____	○ Low	○ Normal	○ High
6.1.7	D-dimer	Highest value: _____	units: _____	○ Low	○ Normal	○ High
6.1.8	IL-6	Highest value: _____	units: _____	○ Low	○ Normal	○ High
6.1.9	Serum White blood count	Highest value: _____	Lowest value : _____	units: _____		
6.1.10	Platelets	Highest value : _____	Lowest value : _____	units: _____		
6.1.11	Neutrophils	Highest value: _____	Lowest value : _____	units: _____		
6.1.12	Lymphocytes	Highest value: _____	Lowest value : _____	units: _____		
6.1.13	Bands	Highest value: _____	Lowest value : _____	units: _____		

6.2 CSF Studies

6.2.1	White blood count	Highest value : _____	Lowest value : _____	units: _____
6.2.2	Protein	Highest value : _____	Lowest value : _____	units: _____
6.2.3	Glucose	Highest value : _____	Lowest value : _____	units: _____

6.3 Urinalysis

6.3.1	Urine White blood count	Highest value : _____	Lowest value : _____	units: _____

6.4 Echocardiogram (check if seen on ANY echocardiogram)

- **6.4.1** ☐ Not done
- **6.4.2** ☐ Normal results
- **6.4.3** ☐ Coronary artery aneurysms
  - **6.4.3.1** Max coronary artery Z-score: _____
- **6.4.4** ☐ Coronary artery dilatation
- **6.4.5** ☐ Cardiac dysfunction (decreased function), specify type:
  - **6.4.5.1** ☐ left ventricular dysfunction
  - **6.4.5.2** ☐ right ventricular dysfunction
- **6.4.6** ☐ Pericardial effusion
- **6.4.7** ☐ Pleural effusion
- **6.4.8** ☐ Mitral regurgitation, specify type: ○ mild ○ moderate ○ severe
- **6.4.9** ☐ Other *(specify)*: _____

6.5 Date of first test showing coronary artery aneurysm or dilatation *(MM/DD/YYYY)*: ____/____/_____

6.6 Abdominal imaging ☐ Ultrasound ☐ CT ○ Not done

- **6.6.1** ☐ Normal
- **6.6.2** ☐ Mesenteric lymphadenopathy
- **6.6.3** ☐ Free fluid
- **6.6.4** ☐ Other *(specify)*: _____

6.7 Chest imaging ☐ Chest x-ray ☐ CT ○ Not done

- **6.7.1** ☐ Normal
- **6.7.2** ☐ Pneumonia
- **6.7.3** ☐ Atelectasis
- **6.7.4** ☐ Pleural effusion
- **6.7.5** ☐ Other *(specify)*: _____

SARS-COV-2 testing

6.8 RT-PCR: ○ Positive ○ Negative ○ Not done
6.8.1 If performed, date *(MM/DD/YYYY)*: ____/____/_____

6.9 Antigen: ○ Positive ○ Negative ○ Not done
6.9.1 If performed, date *(MM/DD/YYYY)*: ____/____/_____

6.10 IgG: ○ Positive ○ Negative ○ Not done
6.10.1 If performed, date *(MM/DD/YYYY)*: ____/____/_____

6.11 IgM: ○ Positive ○ Negative ○ Not done
6.11.1 If performed, date *(MM/DD/YYYY)*: ____/____/_____

6.12 IgA: ○ Positive ○ Negative ○ Not done
6.12.1 If performed, date *(MM/DD/YYYY)*: ____/____/_____